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NOTICE OF ALLOWANCE AND FEE(S) DUE

22850

7590

07/28/2010

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

LEWIS, BEN

ART UNIT

PAPER NUMBER

1795

DATE MAILED: 07/28/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/547,339	04/18/2006	Yixin Zeng	277532U/\$26XPCT	3122

TITLE OF INVENTION: FUEL CELL AND OXIDANT DISTRIBUTION PLATE FOR FUEL CELL

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	10/28/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

22850 7590 07/28/2010

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

Certificate of Mailing or Transmission

Whereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/547,339 04/18/2006 Yixin Zeng 277532U/\$26XPCT 3122

TITLE OF INVENTION: FUEL CELL AND OXIDANT DISTRIBUTION PLATE FOR FUEL CELL

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nonprovisional	NO	\$1510	\$300	\$0	\$1810	10/28/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
LEWIS, BEN	1795	429-034000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

1

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2

3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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1795

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1029 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1029 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

10/547,339

Examiner

Ben Lewis

Applicant(s)

ZENG ET AL.

Art Unit

1795

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Examiner's amendment authorization submitted via Fax on July 7th, 2010.
2. ☒ The allowed claim(s) is/are 1-8, 17 and 22.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

DETAILED ACTION

Examiners's Amendment

An examiner's amendment on the record appears below. Should changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ms. Lee L. Stephina on July 7th and July 16th, 2010. The application has been amended as Follows:

IN THE CLAIMS

Claim 1 (Currently Amended): A fuel cell, comprising:
a membrane-electrode assembly including an electrolyte membrane having an ion-conducting property, an oxidant pole disposed at one side of the electrolyte membrane in a thickness direction thereof, and a fuel pole disposed at other side of the electrolyte membrane in the thickness direction thereof;

an oxidant distributing plate disposed facing the oxidant pole that supplies an oxidant gas to the oxidant pole; and

a fuel distributing plate disposed facing the fuel pole that supplies

a fuel to the fuel pole, wherein

at least one of the oxidant distributing plate and the fuel distributing plate is provided with (a) an opposite passage formed on an opposite surface which is opposite to the membrane-electrode assembly, and (b) a reaction passage on a facing surface which faces the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas or the fuel having flowed in the opposite passage to flow in the reaction passage, and

wherein a pore rate of the oxidant distributing plate is larger at a downstream area than at an upstream area of the reaction passage.

Claim 3 (Currently Amended): The fuel cell according to claim [[3]] 2, wherein the humidifying element ~~is formed by making~~ includes a part of the ~~oxidant distributing plate and/or the fuel distributing plate~~ that is porous to have and has a transmitting property in a thickness direction thereof.

Claim 4 (Currently Amended): A fuel cell, comprising:

a membrane-electrode assembly including an electrolyte membrane having an ion-

conducting property, an oxidant pole disposed at one side of the electrolyte membrane in a thickness direction thereof, and a fuel pole disposed at other side of the electrolyte membrane in the thickness direction thereof;

an oxidant distributing plate disposed facing the oxidant pole that supplies an oxidant gas to the oxidant pole; and

a fuel distributing plate disposed facing the fuel pole that supplies

a fuel to the fuel pole, wherein

at least one of the oxidant distributing plate and the fuel distributing plate is provided with (a) an opposite passage formed on an opposite surface which is opposite to the membrane-electrode assembly, (b) a reaction passage which is formed on a facing surface which faces the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas or the fuel having flowed in the opposite passage to flow in the reaction passage, and (c) a porous portion that communicates at least a part of the opposite passage with at least a part of the reaction passage, wherein an active material contained in the oxidant gas or an active material contained in the fuel flowing in the opposite passage is supplied to the reaction passage via pores of the porous portion, and

wherein a pore rate of the at least one of the oxidant distributing plate and fuel distributing plate is larger at a downstream area than at an upstream area, of the reaction passage.

Claim 6 (Currently Amended): The fuel cell according to claim 1, further including a refrigerant distributing plate disposed at opposite side which is opposite to the membrane-electrode assembly with respect to the oxidant distributing plate and/or the fuel distributing plate for allowing a refrigerant to flow, wherein ~~the~~ a humidifying element is formed by making the refrigerant distributing plate porous to have a transmitting property in a thickness direction thereof, so that the refrigerant flowing in the refrigerant distributing plate is supplied to the opposite passage of the oxidant distributing plate and/or the fuel distributing plate.

Claim 17 (Currently Amended): An oxidant distributing plate for a fuel cell to be disposed facing to an oxidant pole of a membrane-electrode assembly of the fuel cell for supplying an oxidant gas to the oxidant pole, wherein

an opposite passage which is formed on an opposite surface opposite to the membrane-electrode assembly and in which the oxidant gas flows; and

a reaction passage which is formed on a facing surface which faces to the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas having flowed in the opposite passage to flow in the reaction passage.

wherein at least a downstream area of the reaction passage of the oxidant distributing plate is porous, and wherein a pore rate of the oxidant distributing plate is relatively larger at a downstream area than at an upstream area of the reaction passage.

Claim 22 (Currently Amended): The oxidant distributing plate for a fuel cell according to claim 17 wherein the oxidant distributing plate has a hydrophilic property, ~~and a pore diameter of the oxidant distributing plate is relatively smaller at a downstream than at an upstream area, of the reaction passage.~~

Claim 10 is cancelled.

Claim 11 is cancelled.

Claim 12 is cancelled.

Claim 13 is cancelled.

Claim 15 is cancelled.

Claim 18 is cancelled.

Claim 19 is cancelled.

Claim 20 is cancelled.

Claim 21 is cancelled.

Claim 24 is cancelled.

REASONS FOR ALLOWANCE

Claims 1-8, 17 and 22 are allowed.

The prior art does not teach or suggest a fuel cell including all of the claimed features.

The most pertinent art includes Yoshizawa (Japanese Patent No. 2004-039357) and Shimotori et al. (U.S. Patent No. 2004/0110049 A1).

Both the Yoshizawa and Shimotori et al. references do not teach or suggest:

A fuel cell, comprising:

a membrane-electrode assembly including an electrolyte membrane having an ion-conducting property, an oxidant pole disposed at one side of the electrolyte membrane in a thickness direction thereof, and a fuel pole disposed at other side of the electrolyte membrane in the thickness direction thereof;

an oxidant distributing plate disposed facing the oxidant pole that supplies an oxidant gas to the oxidant pole; and

a fuel distributing plate disposed facing the fuel pole that supplies

a fuel to the fuel pole, wherein

at least one of the oxidant distributing plate and the fuel distributing plate is provided with (a) an opposite passage formed on an opposite surface which is opposite to the membrane-electrode assembly, and (b) a reaction passage on a facing surface which faces the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas or the fuel having flowed in the opposite passage to flow in the reaction passage, and

wherein a pore rate of the oxidant distributing plate is larger at a downstream area than at an upstream area of the reaction passage. As claimed by Applicant in claim 1.

Both the Yoshizawa and Shimotori et al. references do not teach or suggest:

A fuel cell, comprising:

a membrane-electrode assembly including an electrolyte membrane having an ion-conducting property, an oxidant pole disposed at one side of the electrolyte membrane in a thickness direction thereof, and a fuel pole disposed at other side of the electrolyte membrane in the thickness direction thereof;

an oxidant distributing plate disposed facing the oxidant pole that supplies an oxidant gas to the oxidant pole; and

a fuel distributing plate disposed facing the fuel pole that supplies

a fuel to the fuel pole, wherein

at least one of the oxidant distributing plate and the fuel distributing plate is provided with (a) an opposite passage formed on an opposite surface which is opposite to the membrane-electrode assembly, (b) a reaction passage which is formed on a facing surface which faces the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas or the fuel having flowed in the opposite passage to flow in the reaction passage, and (c) a porous portion that communicates at least a part of the opposite passage with at least a part of the reaction passage, wherein an active material contained in the oxidant gas or an active material contained in the fuel flowing in the opposite passage is supplied to the reaction passage via pores of the porous portion, and

wherein a pore rate of the at least one of the oxidant distributing plate and fuel distributing plate is larger at a downstream area than at an upstream area, of the reaction passage. As claimed by Applicant in claim 4.

Both the Yoshizawa and Shimotori et al. references do not teach or suggest:

An oxidant distributing plate for a fuel cell to be disposed facing to an oxidant pole of a membrane-electrode assembly of the fuel cell for supplying an oxidant gas to the oxidant pole, wherein

an opposite passage which is formed on an opposite surface opposite to the membrane-electrode assembly and in which the oxidant gas flows; and

a reaction passage which is formed on a facing surface which faces to the membrane-electrode assembly, which is communicated with the opposite passage, and which allows the oxidant gas having flowed in the opposite passage to flow in the reaction passage,

wherein at least a downstream area of the reaction passage of the oxidant distributing plate is porous, and wherein a pore rate of the oxidant distributing plate is relatively larger at a downstream area than at an upstream area of the reaction passage. As claimed by Applicant in claim 17.

For these reasons, the claims are allowed over the prior art. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ben Lewis/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795